

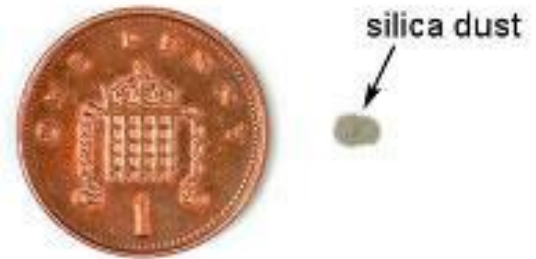


## What is Silica?

Crystalline silica is a basic component of soil, clay, sand, shale, slate, granite and many other minerals including components used to make concrete and mortar. Quartz is the most common form. Many materials in the construction industry contain crystalline silica, including bricks and concrete blocks. When workers chip, cut, drill, grind, grit blast, scabble or tunnel through objects that contain crystalline silica the particles can become small enough to breathe in. the use of power tools can lead to high exposure if exhaust systems or wet-cutting processes are not used or maintained. The fine dust is called respirable crystalline silica (RCS) and is too fine to see with normal lighting.

The quantity of silica contained in stone and other materials varies considerably between different types of stone:

Approximate crystalline silica content of different materials	
Sandstone	70–90%
Concrete, mortar	25–70%
Tile	30–45%
Granite	20–45%, typically 30%
Slate	20–40%
Brick	Up to 30%
Limestone	2%
Marble	2%



## How can RCS harm yur health?

By breathing in RCS, you could develop the following lung diseases:

**Silicosis:** Silicosis makes breathing more difficult and increases the risk of lung infections. Silicosis usually follows exposure to RCS over many years, but extremely high exposures can lead rapidly to ill health.

**Chronic obstructive pulmonary disease (COPD):**

COPD is a group of lung diseases, including bronchitis and emphysema, resulting in severe breathlessness, prolonged coughing and chronic disability. It may be caused by breathing in any fine dusts, including RCS. It can be very disabling and is a leading cause of death. Cigarette smoking can make it worse.

**Lung cancer:** Heavy and prolonged exposure to RCS can cause lung cancer. When someone already has silicosis, there is an increased risk of lung cancer.

The health risks from RCS are insignificant when exposure to dust is adequately controlled you do not need to become ill through work activities.

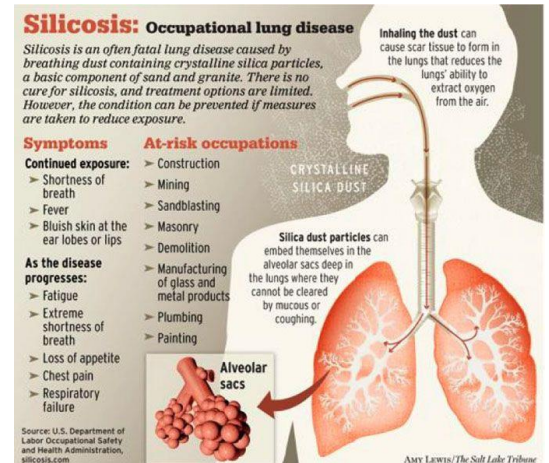
**The Law – The Control of Substances Hazardous to Health Regulations 2002 (COSHH)**

The law The Control of Substances Hazardous to Health Regulations 2002 (COSHH) cover activities which may expose workers to construction dust. There are three key things you need to do:

- Assess (the risks)
- Control (the risks)
- Review (the controls)

Assess (the risks) Assess the risks linked to the work and materials. High dust levels are caused by one or more of the following:

- task – the more energy the work involves, the bigger the risk. High-energy tools like cut-off saws, grinders and grit blasters produce a lot of dust in a very short time;



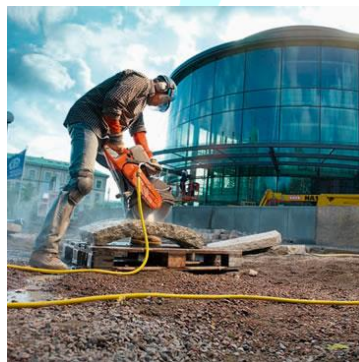
- work area – the more enclosed a space, the more the dust will build up. However, do not assume that dust levels will be low when working outside with high-energy tools;
- time – the longer the work takes the more dust there will be;
- frequency – regularly doing the same work day after day increases the risks.

**Control (the risks)** Use the following measures to control the risk. Stop or reduce the dust Before work starts, look at ways of stopping or reducing the amount of dust you might make. Use different materials, less powerful tools or other work methods. For example you could use:

- the right size of building materials so less cutting or preparation is needed;
- silica-free abrasives to reduce the risks when blasting;
- a less powerful tool – eg a block splitter instead of a cut-off saw;
- a different method of work altogether – eg a direct fastening system.

**Control the dust** Even if you stop some dust this way, you may do other work that could still produce high dust levels. In these cases the most important action is to stop the dust getting into the air. There are two main ways of doing this:

- **Water** – water damps down dust clouds. However, it needs to be used correctly. This means enough water supplied at the right levels for the whole time that the work is being done. Just wetting the material beforehand does not work



- **On-tool extraction** – removes dust as it is being produced. It is a type of local exhaust ventilation (LEV) system that fits directly onto the tool. This 'system' consists of several individual parts – the tool, capturing hood, extraction unit and unit to the correct (Medium) or L (Low) use a general



tool, capturing hood, tubing. Use an extraction specification (ie H (High) M Class filter unit). Don't just use a commercial vacuum.

## Respiratory Protective Equipment

You will need to make sure that the RPE is:

- Adequate for the amount and type of dust – RPE has an assigned protection factor (APF) which shows how much protection it gives the wearer. The general level for construction dust is an APF of 20. This means the wearer only breathes one twentieth of the amount of dust in the air;
- Suitable for the work – disposable masks or half masks can become uncomfortable to wear for long periods. Powered RPE helps minimise this. Consider it when people are working for more than an hour without a break;
- Compatible with other items of protective equipment;
- Fits the user. Face fit testing is needed for tightfitting masks;
- Worn correctly. Anyone using tight-fitting masks also needs to be clean shaven.

**Remember: RPE is the last line of protection. If you are just relying on RPE you need to be able to justify your reasons for this.**

Find out more on the dust control measures for cut off saws on HSE

<http://www.hse.gov.uk/pubns/cis54.pdf>

Time to clear the air!

Check this video out on HSE

<http://www.hse.gov.uk/construction/cleartheair/>

Find out more on Silicosis on HSE

<http://www.hse.gov.uk/lung-disease/silicosis.htm>

Check out the Toolbox Talk for Silica



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